

REMARKS

Claims 1-53 remain pending in this application. Via the present submission, claims 1, 13, and 51 are amended. No claims are canceled or added.

Claim 1 is amended to specify that the protection film is a dielectric protection film. Support for the amendment may be found in applicants' specification, on page 10, line 5-8, and on page 22, lines 35-39. Claims 13 and 51 are amended in view of informalities.

Claims 1-53 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Applicants respectfully traverse this rejection.

The Office Action explains that the indefiniteness rejection is based on an understanding that structural relationships between the claimed elements are not provided. However, structural relationships between the claimed elements *are* provided. Note the following explanation:

Claim 1 describes a semiconductor optical device apparatus that comprises the following:

- (1) a substrate;
- (2) a compound semiconductor layer;
- (3) a protection film having a stripe-shaped opening; and
- (4) a ridge type compound semiconductor layer.

Claim 1 also provides the structural relationships between these elements: The claim explicitly recites that the protection film is formed "on" the compound semiconductor layer; and the ridge type compound semiconductor layer is formed "as to cover" the stripe-shaped opening. The claim also specifies that the compound semiconductor layer, the protection film, and the ridge type compound semiconductor layer are formed "on" the substrate. That is, the recited elements are listed, and their

structural relationships are specified. Thus, it is not true that structural relationships between the claimed elements are not provided.

Accordingly, applicants solicit the withdrawal of the indefiniteness rejection of claims 1-53.

Claim 9 stands objected to under 37 C.F.R. § 1.75(c) as not further limiting the subject matter of the claim from which it depends (claim 1). Applicants respectfully traverse this objection.

Parent claim 1 describes a semiconductor optical device apparatus that satisfies “either or both” of specified “condition (a)” and “condition (b).” Dependent claim 9 requires that the semiconductor optical device apparatus satisfy “both” conditions. That is, an apparatus that satisfies *only* one of the conditions would be described by claim 1 and not by claim 9. Therefore, claim 9 is further limiting.

Accordingly, applicants solicit the withdrawal of the objection to claim 9.

Claims 1, 42-45, 48, and 51-53 stand rejected under 35 U.S.C. § 102(b) as anticipated by **Adachi et al.** (U.S. Patent No. 5,523,256). Applicants respectfully traverse this rejection for two reasons: (1) no embodiment of **Adachi et al.** has all the claimed features, and the Office Action provides no indication of how any particular embodiment supposedly has these features; and (2) the claims are now amended in particular to recite that the “protection film” is a “dielectric protection film,” and **Adachi et al.** do not teach this element.

To justify the rejection, the Office Action presents citations to various parts of the **Adachi et al.** disclosure that correspond to different embodiments and pre-existing designs (labeled “Prior Art”). However, the Office Action provides no indication of a *single* embodiment that has an

appropriate combination of the individually-cited features to anticipate the claims. Accordingly, the rejection is unsupported.

For example, in the discussion of features relevant to base claim 1, the Office Action explains that the rejection relies on the **Adachi et al.** layer 6 of Fig. 3 teaching the claimed “protection film having a stripe-shaped opening.” However, such reliance is improper, because Fig. 3 does not show that layer 6 has a stripe-shaped opening as claimed. This embodiment of **Adachi et al.** cannot anticipate claim 1, because there is no “protection film having a stripe-shaped opening.”

Although not stated in the Office Action, applicants acknowledge that current confining layers 7 and 8 may possibly be interpreted as having a stripe-shaped opening. However, the *claimed* “stripe-shaped opening” has a “ridge type compound semiconductor layer” formed thereon, and the Office Action does not identify which **Adachi et al.** element of the Fig. 3 embodiment supposedly teaches this feature. Figure 3 only shows that contact layer 9 and electrode 10 are formed on current confining layers 7 and 8, and neither contact layer 9 nor electrode 10 are a fair teaching of a “ridge type compound semiconductor layer.”

Therefore, applicants submit that the **Adachi et al.** embodiment of Fig. 3 cannot anticipate claim 1, because this embodiment does not teach a semiconductor optical device apparatus as described in the claim. In particular, the Fig. 3 embodiment does not teach the recited elements with the structural relationships described in the claim.

The Office Action presents numerous citations to the **Adachi et al.** specification, most of which does not correspond to Fig. 3. Without an explanation of how the cited text also describes

the embodiment of Fig. 3, the citations are inappropriate if the rejection is to rely on Fig. 3.

Applicants note additionally that claim 1 also requires that the “ridge type compound semiconductor layer” have a smaller refractive index than the refractive index of the “active layer.” Although Office Action explicitly states (page 4) that **Adachi et al.** teach this feature, the Office Action does not provide a supporting citation following the statement. Applicants acknowledge that the Office Action generally provides various citations as supposedly supporting the rejection, but the cited text does not teach refractive indices as claimed. Applicants elaborate as follows:

The text of column 1, lines 50-64 (cited as supporting the rejection), references “effective refraction indices,” but it does not say that a “ridge type compound semiconductor layer” has a smaller refractive index than the refractive index of an “active layer.” Therefore, this citation does not support the rejection.

The text from column 4, line 67, through column 5, line 5 (cited as supporting the rejection), summarizes the feature that the difference between an effective refractive index taken inside the stripe-shaped ridge and an effective refractive index taken outside the stripe-shaped ridge is larger in the vicinity of at least one of end faces of a cavity than in a portion excluding the end faces of the cavity. That is, the differences in refractive indices of two adjacent layers changes along the extent of the cavity. However, the cited text does not indicate which refractive index is smaller, and the Office Action does not explain which layer is interpreted as the “ridge type compound semiconductor layer” and which layer is the “active layer.”

Applicants respectfully submit that the multiple citations to different parts of the **Adachi et al.** disclosure are not referenced in the Office Action in such a way to support an anticipation

rejection. Applicant find no embodiment or combination of teachings among the cited portion of **Adachi et al.** that could anticipate claim 1. Accordingly, anticipation rejection of claim 1 under 35 U.S.C. § 102(b) should be withdrawn. Because claims 42-45, 48, and 51-53 depend from claim 1, the anticipation rejection of those claims should also be withdrawn for at least the reason of their dependency.

If, for some reason, the Examiner ultimately decides to maintain the rejection, applicants request the Examiner actually indicate which element of **Adachi et al.** supposedly corresponds to each particular claim element. As discussed above, the general citations to various portions of the disclosure do not provide a justification of the rejection. If the **Adachi et al.** elements relied upon are not part of a single embodiment, the Examiner is requested to explain the justification for holding that these elements can combine to anticipate the claims. Applicants respectfully submit that such a showing cannot be provided, so the anticipation rejection should be withdrawn.

As noted above, the rejection should be withdrawn for at least another reason: **Adachi et al.** do not teach a “protection film” that is a “dielectric protection film” as now explicitly recited in the claims.

Adachi et al. discuss prior art in col. 1, lines 25-33, as follows:

As shown in FIG. 1, this semiconductor laser includes an n-GaAs substrate 1, an n-GaAs buffer layer 2, an n-(Al_{0.6}Ga_{0.4})_{0.5}In_{0.5}P cladding layer 3, a Ga_{0.5}In_{0.5}P active layer 4, a p-(Al_{0.6}Ga_{0.4})_{0.5}In_{0.5}P cladding layer 5, p-Ga_{0.5}In_{0.5}P layer 6, *an n-GaAs current confining layer 8*, and a p-GaAs contact layer 9 formed in this order. A p-side electrode 10 and an n-side electrode 11 are formed, respectively, upon the p-GaAs contact layer 9 and upon the bottom face of the substrate 1. (*Emphasis added.*)

Adachi et al. also discuss in column 1, lines 46-48 :

... *by an MOVPE method* or the like, the n-GaAs current confining layer **8** is selectively grown on the outside of the stripe, and the p-GaAs contact layer **9** is further grown. (*Emphasis added.*)

With regard to **Adachi et al.**'s embodiments, col. 3, in lines 46-57, states:

In another embodiment of the invention, the current confining means further includes a second current confining layer provided above the first current confining layer, the second current confining layer having an energy band gap smaller than an energy band gap of the active layer.

In still another embodiment of the invention, the semiconductor substrate includes GaAs; the active layer comprises GaInP; the pair of cladding layers comprise AlGaInP; the first current confining layer comprises at least one of *AlGaAs* and *AlGaInP*; and the second current confining layer comprises *GaAs*. (*Emphasis added.*)

In Examples 1 and 2, an n-Al_{0.5}Ga_{0.5}As first current confining layer **7** and an n-GaAs second current confining layer **8** were formed (col. 11, lines 29-31, and col. 15, lines 56-57). In Examples 3-5, n-GaAs current confining layer **8** was formed (col. 19, line 31, col. 22, lines 13-14 and col. 26, lines 54-55).

That is, **Adachi et al.** do not teach a "protection film" that is a "dielectric protection film," and base claim 1 is amended to emphasize this distinction between the **Adachi et al.** disclosure and applicants' invention. Accordingly, for this additional reason, applicants respectfully submit that the rejection of claims 1, 42-45, 48, and 51-53 should be withdrawn.

Claims 2-41, 46, 47, 49, and 50 stand rejected under 35 U.S.C. § 103(a) as obvious over

Adachi et al. (U.S. Patent No. 5,523,256) in view of another patent to **Adachi et al.** (U.S. Patent No. 5,974,068). Applicants respectfully traverse this rejection.

Although not explicitly stated in the Office Action, the lack of a discussion of the claim elements that are recited in base claim 1 implies that the obviousness rejection relies in part on **Adachi et al.** '256 anticipating base claim 1. However, as discussed above, **Adachi et al.** '256 do not anticipate claim 1, so an obviousness rejection cannot be proper if it is based on such an anticipation rejection.

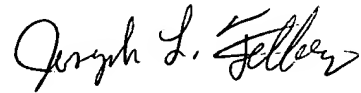
In fact, applicants find no other combination of teachings from **Adachi et al.** '256 and from **Adachi et al.** '068, along with valid suggestions, that could support an obviousness rejection. For example, *neither* reference teaches nor suggests a “protection film” that is a “dielectric protection film.” Applicants discuss **Adachi et al.** '256 above. Regarding **Adachi et al.** '068, note in particular col. 3, line 59-61, col. 11, lines 22-25, col. 15, lines 42-44, col. 19, lines 13-14, col. 21, line 59, and col. 26, lines 30-31.

Accordingly, applicants solicit the withdrawal of the obviousness rejection of dependent claims 2-41, 46, 47, 49, and 50 under 35 U.S.C. § 103(a).

In view of the amendments and remarks above, applicants now submit that the entire application is in condition for allowance. Accordingly, a Notice of Allowability is hereby requested. If for any reason the Examiner believes that this application is not now in condition for allowance, she is invited to contact applicants' undersigned attorney at the telephone number indicated below to arrange for disposition of this case.

In the event that this paper is not timely filed, applicants petition for an appropriate extension of time. The fees for such an extension, or any other fees which may be due, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,
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Enclosure: Petition for Extension of Time

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